


Hz Measurements

1. Set the rotary selector to Hz position.
2. Insert black lead into the COM terminal and red lead into the V_{Ω} terminal.
3. Connect the test lead probes to frequency source and read the display. If the measured frequency is greater than 20 kHz, OFL is displayed.

Battery Replacement

The Meter uses a 9 V battery (NEDA 1604 or IEC 6LF22). Replace the battery when the Low Battery indicator () appears to ensure accuracy.

Specifications (at 23 °C ± 5 °C ; < 80 % RH)

FUNCTION	RANGE	RESOLUTION	ACCURACY
AC A Single-Core Mode (45 Hz to 1 kHz)	200 A	0.1 A	1.5 % + 3 d
AC A Multi-Core Mode (45 Hz to 400 Hz)	100 A	0.1 A	5 % + 10 d
AC V (45 Hz to 400 Hz)	200 V	0.1 V	0.8 % + 3 d
	600 V	1 V	1.2 % + 3 d
DC V	200 V	0.1 V	0.5 % + 3 d
	600 V	1 V	1.0 % + 3 d
Ω	2 k Ω	1 Ω	1.0 % + 5 d
Hz	2 kHz	1 Hz	1.0 % + 5 d
	20 kHz	10 Hz	
Continuity Test	Open Circuit Voltage: < 3 V Threshold: < 15 Ω approx.		
Diode Test	Open Circuit Voltage: < 3 V Max. Test Current: < 1.0 mA		

The current measurement readings of the meter can momentarily be out of the accuracy specs. printed in the manual under the specific EMC environment, but the meter works properly under the normal EMC environment.

Main Jaw Opening: 13 mm (0.51")

Inner Jaw Capacity: 22 mm (0.87")

Storage Temp.: -20 C to 60 C

Operating Temp.: 0C to 40 C

Display: 3 1/2 digit, 2000 counts LCD display, updates 3 times/sec.

Altitude: 2000 m

Pollution Degree: 2

Battery Type: Single 9 V (NEDA 1604)

Battery Life: 180 hrs. typical

Dimensions (H x W x D): 227 x 94 x 44.5 mm
(8.94 x 3.7 x 1.75")

Weight: Approx. 350 g (12.4 Oz)

Safety: Complies to EN 61010-2-32, CAT III 600 V standards.






E.M.C.: Meets EN 61326 : 1997 + A₁ : 1998 + A₂ : 2001

Temp.Coefficient: 0.1 x (specified accuracy)/°C






Optimized Cable Types


The advanced measuring techniques used by this Meter enables the measurement of current in 1-, 2- or 3-core cables of most configurations. It is optimized for the most commonly encountered cable types (see appropriate table).

50 Hz Variant: European Cable Types

SELECTOR POSITION					
CABLE					
H05VV-F (3 CORE) 1.5 mm ²	•				
H05VV-F (3 CORE) 2.5 mm ²	•				
A05VVH2-RU 2.5 mm ²	•				
A05VVH2-RU 4.0 mm ²	•				
A05VVH2-RU 6.0 mm ²	•				
H05VV-F (2 CORE) 0.75 mm ²					•
H03VV-F (2 CORE) 0.75 mm ²		•			
T4 6004 (FLAT TRIPLE) 2.5 mm ²			•		
T4 6004 (FLAT TRIPLE) 3.5 mm ²			•		
T4 6004 (FLAT TRIPLE) 10 mm ²			•		
T4 6004 (FLAT TRIPLE) 16 mm ²			•		
6193Y (FLAT TRIPLE) 1.5 mm ²				•	
6193Y (FLAT TRIPLE) 2.5 mm ²				•	
6193Y (FLAT TRIPLE) 4.0 mm ²				•	

60 Hz Variant: North American Cable Types

SELECTOR POSITION					
CABLE					
1277 CVTC 2 WIRE 12 AWG					•
1277 CVTC 3 WIRE 10 AWG	•				
1277 VNTC 2 WIRE FLAT D10					•
1277 VNTC 2 WIRE FLAT D16					•
1277 VNTC 2 WIRE FLAT D14					•
1277 VNTC 2 WIRE FLAT D18					•
1277 CVTC 2 WIRE 10 AWG					•
1277 CVTC 3 WIRE 14 AWG	•				
1277 CVTC 2 WIRE 18 AWG		•			
1277 CVTC 2 WIRE 16 AWG		•			
1277 VNTC 3 WIRE 10 ROUND	•				
1277 VNTC 3 WIRE 18 ROUND	•				
1277 CVTC 3 WIRE 16 AWG	•				
1277 VNTC 3 WIRE 16 ROUND	•				
1277 VNTC 2 WIRE 12 ROUND		•			
62 SO 2 WIRE ROUND 14 AWG		•			
62 SO 3 WIRE ROUND 14 AWG	•				
1277 CVTC 3 WIRE 12 AWG	•				
UF-B Uninsulated 12 AWG			•		
UF-B Uninsulated 10 AWG			•		
NM-B Uninsulated 14 AWG			•		
SPT-2 Insulated 18 AWG				•	

 a world leader in test & measurement

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Model 850

Single-/Multi-Core AC Clampmeter








User Guide

Read First : Safety Information

To ensure safe and appropriate operation, observe the following instructions :

- Do not attempt to measure any voltage that exceeds 600 V or a frequency higher than 1 kHz fundamental. The meter may be damaged.
- Voltages above 60 V dc or 30 V ac may constitute a serious shock hazard.
- Avoid working alone with high voltage circuits.
- To avoid false readings that can lead to electrical shock and injury, replace the battery as soon as the low battery indicator  appears.
- Never measure any current while the test leads are inserted into the input terminals.
- Do not use the meter or test leads whose insulating protection has been impaired. Use extreme caution when working around bare conductors or bus bars.
- Use the meter only as specified in this user guide; otherwise, the protection provided by this meter may be impaired.

Symbols used on the instrument

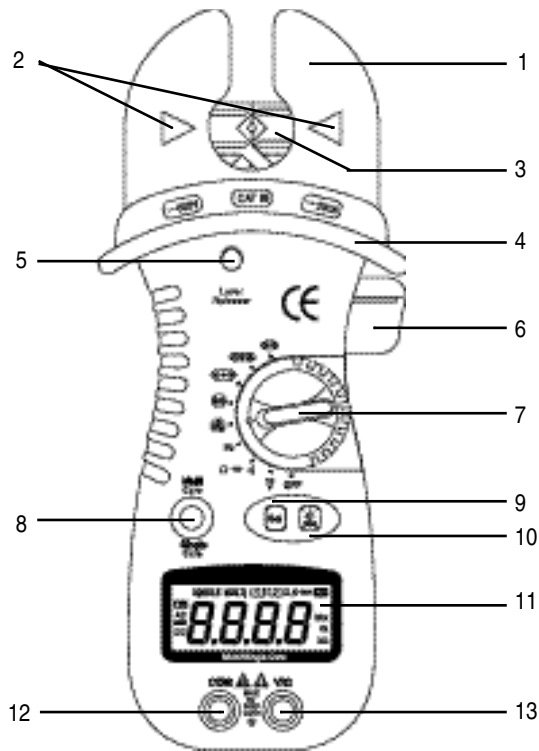
-  Risk of electric shock
-  Risk of danger. Important information. See user guide.
-  Equipment protected by double or reinforced insulation.
-  Battery
-  Ground(Earth)
-  AC-Alternating Current
-  Either DC or AC

This Meter is a handheld and battery operated digital AC clampmeter for measuring current in multi-core cables and power cords without the need to split them as well as in single-core cables and power cords. This Meter can measure current in 2- or 3- core, round, flat or twin and earth cables up to 100 A with a resolution of 0.1 A. Single-core current measurements up to 199.9 A mean that this meter can also function as a conventional AC clampmeter. This Meter is optimized for specific European and North American cable types (see Optimized Cable Types) and frequencies (45 to 400 Hz) in the multi-core current measurements. The meter is designed and tested according to EN 61010-2-032:95 CAT III 600 V standards and EN 61326 : 1997 + A₁ : 1998 + A₂ : 2001 (E.M.C.) standards.

Features

- 3½ digit, 2000 count LCD display
- AC current measurement in 1, 2, or 3- conductor cable
- Use on flat, round, or oval cables
- Measures up to 199.9 A on single-core cables
- Measures up to 100 A on multi-core cables
- Jaw opening : 13 mm (0.51")
- AC/DC voltage measurement (2 ranges : 200 V/600 V)
- Ohms measurement up to 2 kΩ
- Frequency measurement (2 ranges : 2 kHz/20 kHz)
- Continuity check & Diode test
- Data Hold
- Backlighted LCD (automatically Off after 30 seconds)
- Auto-Power-Off (automatically Off after 30 Min. No activity)
- EN 61010-2-032, CAT III 600 V safety protection

Controls and Indicators



- 1. Open Jaws** Opening 13 mm (0.51") to enclose conductors
- 2. Centering Marks** Position the conductor within the jaws at the center of the indicated marks as much as possible in order to meet the accuracy specs.
- 3. Inner Jaws** Opening 22 mm (0.87") to measure the diameter of the multi-core cables under test
- 4. Barrier (Hand Guard)** Provides a protective distance and reduces the danger of touching the cable under test

5. Inner Jaw Release Pushbutton

Press this button to release the inner jaws.

6. Inner Jaw Lever

Opens and closes inner jaws. Press this lever to the end for having the inner jaws left maximum-opened when measuring single-core cables.

7. Selector

Turn the Power On or Off and select a function.

8.



Press this pushbutton to toggle between Single-Core measurement mode and Multi-Core measurement mode.

9.



Press this pushbutton momentarily to toggle U.S. Cables / EU Cables in Multi-Core mode and to toggle AC/DC in \bar{V} function, or to select secondary functions in Ω \rightarrow \rightarrow \rightarrow function.

10.



Press this pushbutton momentarily to activate Data Hold, or press this button for more than 1 second to turn the backlight On or Off.

11. LCD Display

3 1/2 digit 2000 counts display LCD.

12. COM

Common (Ground reference) Input Terminal for all functions except A function.

13. V Ω

Input Terminal for all functions except A function.



14. DC

This annunciator indicates DC is selected.

15.

This symbol indicates Negative Polarity.

16. AC

This annunciator indicates AC is selected.

17.

Low Battery alert, replace the battery as soon as possible to ensure accuracy.

18. DATA

Digital readings of data being measured.

19. SINGLE

This annunciator indicates Single-Core mode is selected.

20. MULTI

These annunciators indicate Multi-Core mode (\bar{U} U.S. cables, \bar{E} European cables) is selected.

21. D.H

This annunciator indicates data HOLD function is activated.

22. \rightarrow

This symbol indicates \rightarrow function is selected.

23. \rightarrow

This symbol indicates \rightarrow function is selected.

24. kHz ...

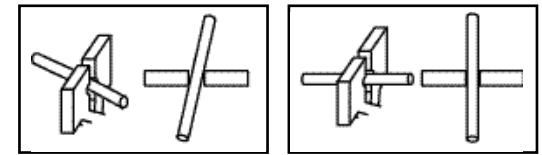
These annunciators indicate the function being selected and/or the appreciated measurement units.

Meter Operation

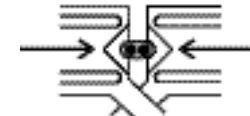
Multi-Core AC Measurement

1. Set the Meter in the Multi-Core mode. (The meter defaults at Multi-Core mode.)
2. Determine the cable Type, and set the rotary selector to the appropriate position.
3. Press the \bar{U} button to toggle between \bar{U} cables and \bar{E} cables.
4. Press the jaw opening lever to open the inner jaws. Fit the jaws squarely around the cable sheath and **in line** with the cable.

5. Align the cable between the inner jaws, and release the lever to close the jaws on the cable.



6. When measuring the current in a flat cable, the cable must be positioned as follows :



The proximity of other current carrying conductors may affect the reading. Keeping a minimum distance of 125 mm (5") from these conductors will minimize this affect.

7. Read the current in the display.

NOTE : For the Single-Core mode, press the lever to the far end for having the inner jaws left maximum-opened and locked.

AC/DC Volts Measurements

1. Set the rotary selector to \bar{V} position. The meter defaults at \bar{V}
2. Press the \bar{V} button to select \bar{V} if required.
3. Insert black lead into the COM terminal and red lead into the V Ω terminal.
4. Connect test leads to voltage source and observe the digital display.

\rightarrow \rightarrow Measurements (or Tests)

1. Set the rotary selector to Ω \rightarrow \rightarrow position. The meter defaults at Ω .
2. Press the \rightarrow button to select \rightarrow or \rightarrow function, if required.
3. Insert black lead into the COM terminal and red lead into the V Ω terminal.
4. Connect test leads to resistance source and observe the digital display. In the continuity (\rightarrow) mode, a reading of 15 Ω or less will cause the continuity beeper to sound.

5. In the Diode (\rightarrow) test mode, forward drop voltage (forward biased) is displayed when a diode is connected in the forward direction. For a good silicon diode, the typical forward drop voltage is between 0.4 V to 0.9 V. A reading higher than that indicates a leaky diode (defective). A zero reading indicates a shorted diode. An OFL indicates an open diode. Both are defective diodes. Reverse the test leads connections across the diode. The display shows OFL if the diode is good. Any other readings indicate defective diodes.